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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/664,296

09/17/2003

Toshiki Hirano

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4582

7590 05/11/2007  
WAGNER MURABITO & HAO LLP  
123 WESTRIDGE DRIVE  
WATSONVILLE, CA 95076

EXAMINER

KAPADIA, VARSHA A

ART UNIT

PAPER NUMBER

2627

MAIL DATE

DELIVERY MODE

05/11/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/664,296

Applicant(s)

HIRANO ET AL.

Examiner

Varsha A. Kapadia

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 13-22 is/are rejected.
- 7) ☐ Claim(s) 4 and 6-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/13/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This office action is responsive to communication filed on February 22, 2007.

### **Information Disclosure**

The information disclosure statement (IDS) submitted on April 13, 2007 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### **Rejection Under 35 U.S.C. 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5 and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino et al (5,929,326) in view of Fukuda (6,181,520).

With regards to claim 1, Imaino et al disclose a disk drive (see fig.7) comprising: a base casting and at least one disk surface coupled to the base casting (See fig.7 element 100 and disclosure thereof); an actuator assembly for accurately positioning at least one slider over the disk surface (See fig.7 element 138, 134 and disclosure thereof); a suspension load beam having a dimple (see fig.1 elements 18,15, 20 and disclosure thereof); a laminated flexure (see figs. 1-2 element 17,35,36,39, figs. 3-4 and disclosure thereof and col.4 lines 33-35) coupled to the suspension load beam (18), the flexure having a surface adapted to receive a slider and a surface adapted to contact dimple (see fig.3 element 63, fig.4 element 73 and disclosure thereof; and the

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paragraph bridging cols. 4 and 5), the flexure including a head-disk interaction sensor integral with the flexure for (see fig.3 element 60,68; fig.4 elements 70,78 and disclosure thereof) outputting a sensor signal.

Imaino et al fails to further disclose that the head-disk interaction sensor is integrated within the flexure as recited in the claim.

Fukuda however discloses the head-disk interaction sensor (electric resistance pattern for detecting strain is considered as a sensor) that is integrated within the flexure (see figs. 5-6 elements 7, 11, 22, 20 disclosure thereof and col.6 line 49 to col.6 line 37).

It would have been obvious to one of ordinary skill in the art at the time this invention as made to modify the disclosure of Imaino et al with the above teaching from Fukuda to provide a disk drive having a head-disk interaction sensor that is integral part of the flexure so that wiring may be eliminated and hence simplify the arrangement.

With regards to claim 2, Imaino et al disclose a head-disk interaction sensor is an accelerometer (see col.1 lines 3-6 and col.3 lines 12-32, elements 60,68,70,78 and disclosure thereof).

With regards to claims 3 and 5, Imaino et al disclose a head-disk interaction sensor further includes a pressure sensor sensing pressure between the flexure and the dimple (see col.1 lines 3-6 and lines 48-54 and col.3 lines 12-32, elements 60,68,70,78 and disclosure thereof).

With regards to claims 13-22 Imaino et al discloses write inhibit circuit for inhibiting write operation responsive to sensor signal including a filter circuit conditioning the sensor signal; (see col.1 lines 3-6; wherein the U.S. Pat. No. 5,423,207 incorporated by reference is

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relied upon for filter circuit capabilities including low-pass filter; high-pass filter, bandpass filter and passband filter limitations as recited in the claims 13-22.)

#### **Allowable Subject Matter**

Claims 4 and 6-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art of the record fails to specifically disclose that the accelerometer/pressure sensor includes a piezoelectric material layer and a conductive layer, the piezoelectric material layer and the conductive material layer each being formed as a layer of the laminated flexure and each being patterned to substantially correspond to a top surface of a back portion of the slider as recited in the claims.

#### **Response To Remarks**

Applicant's arguments filed on February 22, 2007 have been considered but are moot in view of the new ground(s) of rejection.

#### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Varsha A. Kapadia whose telephone number is (571) 272-7557. The examiner can normally be reached on Mon Tue and Thurs. from 6:30 AM to 2:00 PM.

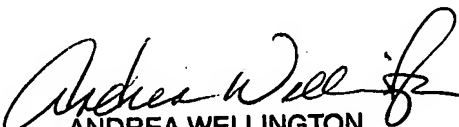
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571 272 4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



VK



ANDREA WELLINGTON  
SUPERVISORY PATENT EXAMINER